中国化学工程学报 2001 9 (3): 319-321 ISSN: 1004-616x CN: 44-1063/R

RESEARCH NOTES

Pathwardhan-Kumer密度规则及基于线性等压关系的密度规则可适性的研究

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 The applicability of the density rule of Pathwardhan and Kumer and the rule based on the linear isopiestic relation is studied by comparison with experimental density data in the literature. Predicted and measured values for 18 electrolyte mixtures are compared. The two rules are good for mixtures with and without common ions, including those containing associating ions. The deviations of the rule based on the linear isopiestic relation are slightly higher for the mixtures involving very strong ion complexes, but the predictions are still quite satisfactory. The density rule of Pathwardhan and Kumer is more accurate for these mixtures. However, it is not applicable for mixtures containing non-electrolytes. The rule based on the linear isopiestic relation is extended to mixtures involving non-electrolytes. The predictions for the mixtures containing both electrolytes and non-electrolytes and the non-electrolyte mixtures are accurate. All these results indicate that this rule is a widely applicable approach.

关键词 binary density rules density apparent molar volume multicomponent system binary sub-system

分类号

DOI:

The Applicability of the Density Rule of Pathwardhan and Kumer and the Rule Based on Linear Isopiestic Relation

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Received Revised Online Accepted

Abstract The applicability of the density rule of Pathwardhan and Kumer and the rule based on the linear isopiestic relation is studied by comparison with experimental density data in the literature. Predicted and measured values for 18 electrolyte mixtures are compared. The two rules are good for mixtures with and without common ions, including those containing associating ions. The deviations of the rule based on the linear isopiestic relation are slightly higher for the mixtures involving very strong ion complexes, but the predictions are still quite satisfactory. The density rule of Pathwardhan and Kumer is more accurate for these mixtures. However, it is not applicable for mixtures containing non-electrolytes. The rule based on the linear isopiestic relation is extended to mixtures involving non-electrolytes. The predictions for the mixtures containing both electrolytes and non-electrolytes and the non-electrolyte mixtures are accurate. All these results indicate that this rule is a widely applicable approach.

Key words binary density rules; density; apparent molar volume; multicomponent system; binary sub-system

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